Jun 11th, 1:50 PM - 2:10 PM

The Biggest Barriers to Barrier Removal

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University of Wisconsin - Madison

THE BIGGEST BARRIERS TO BARRIER REMOVAL

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Drawing by Steve Varner

This presentation represents a large assortment of dams that were retained or removed, completed by a wide variety of project partners and engineering design firms. By utilizing these examples I am making no claims that Princeton Hydro completed these projects, however I was personally involved in many of these projects, as a project partner or as part of the engineering design team, through my previous employment with American Rivers and MMI.

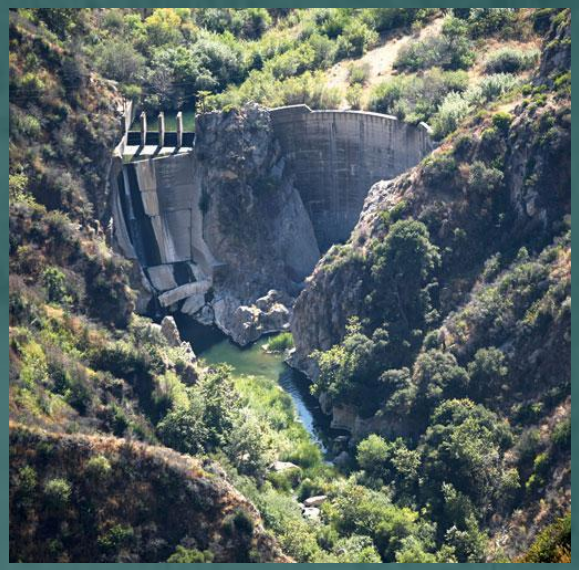
OBSOLETE DAMS

Typically Removed Due to:

- Dam Safety
- Liability
- Economic Issues (cost of maintenance)
- Environmental Concerns (i.e. connectivity, water quality, restoration of natural fluvial functions)

Typically Retained Due to:

- Aesthetics & Recreational
- Water Intakes/Diversions
- Hydroelectric
- Quantity of Sediment
- Quality of Sediment
- Scale of Project
- Funding Issues
- Historic Issues
- Infrastructure
- Owner Buy-in
- Community Politics
- Sensitive Species



AESTHETICS & RECREATION

Dam Retained

Sweet Pond Dam, VT

Sennebec River, ME

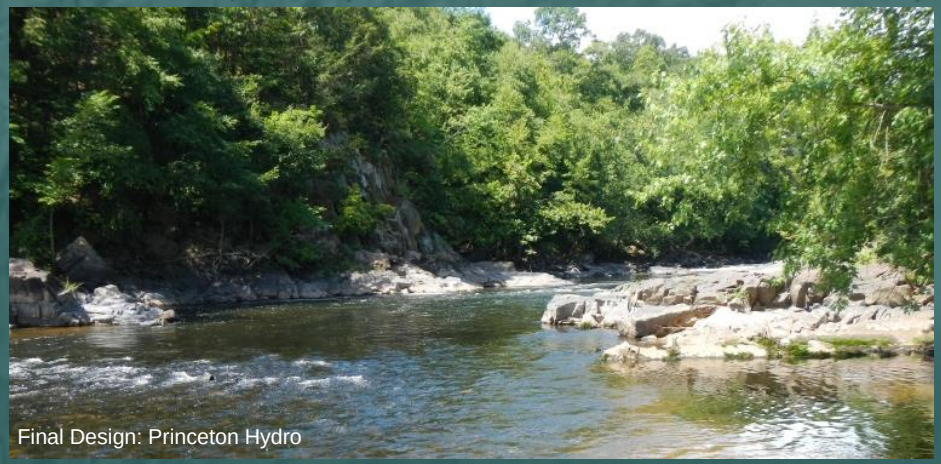
Conceptual Design: Wildman
Final Design: URS

Princeton Hydro

AESTHETICS & RECREATION

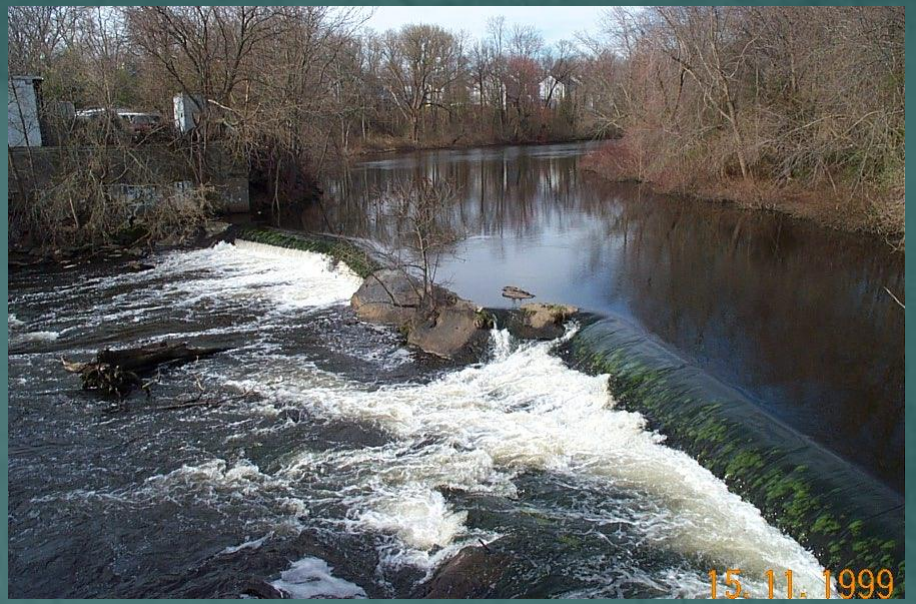
Dam Removed

Spoonville Dam, CT (worked with whitewater boaters)



Final Design: Princeton Hydro

Pawtuxet Dam, RI
(worked on envisioning with community)



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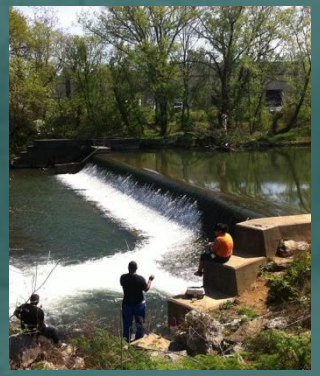
WATER INTAKE

Dam Retained

Goldsboro Dam, NC

Barrier #1 Little Lehigh, PA



Green River Water Supply Dam, MA

WATER INTAKE

Dam Removed

Ballou Dam, MA
(water tank for fire surpression)

Final Design: MMI

Great Works , ME (alternate free flowing water intake)

Final Design: MMI

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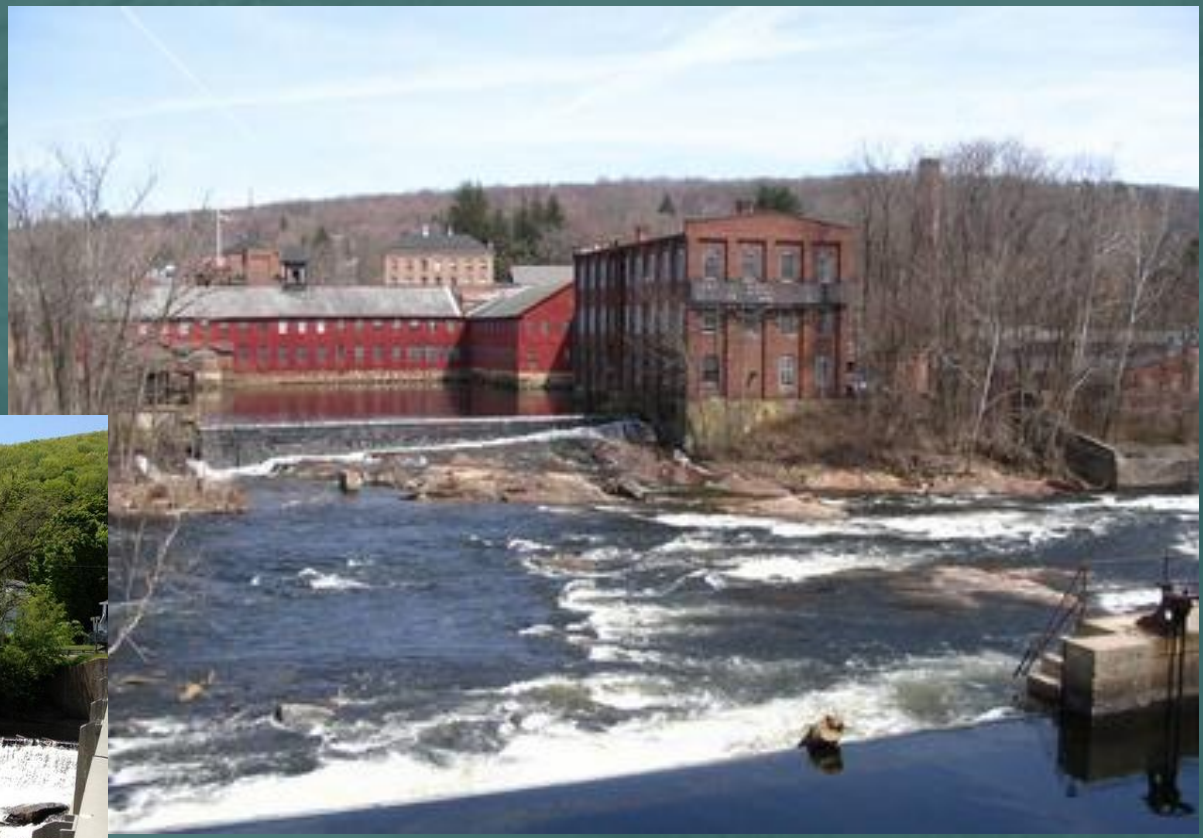
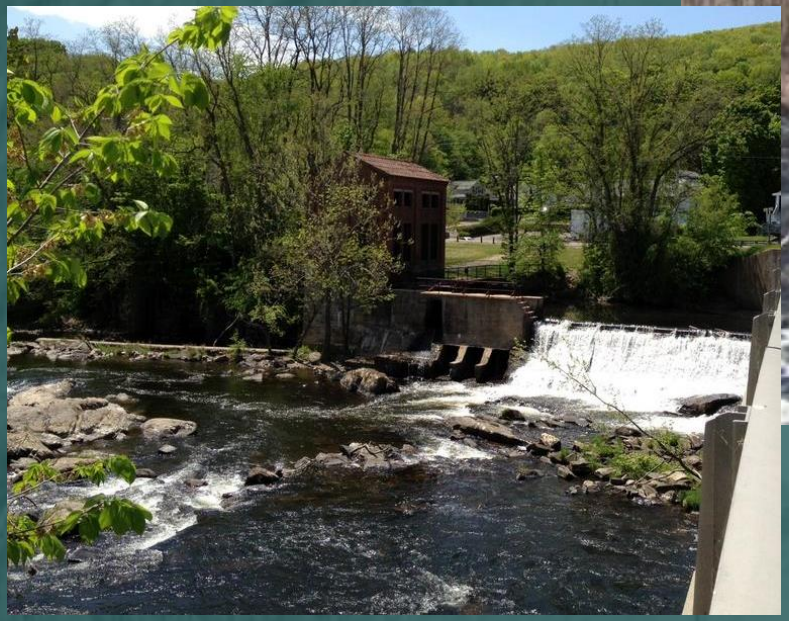
HYDRO-ELECTRIC
Dam Retained

Collinsville Dam, CT





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HYDRO-ELECTRIC
Dam Removed

Edwards Dam, ME (FERC relicensing – balancing issues)

1998 - Edwards Dam

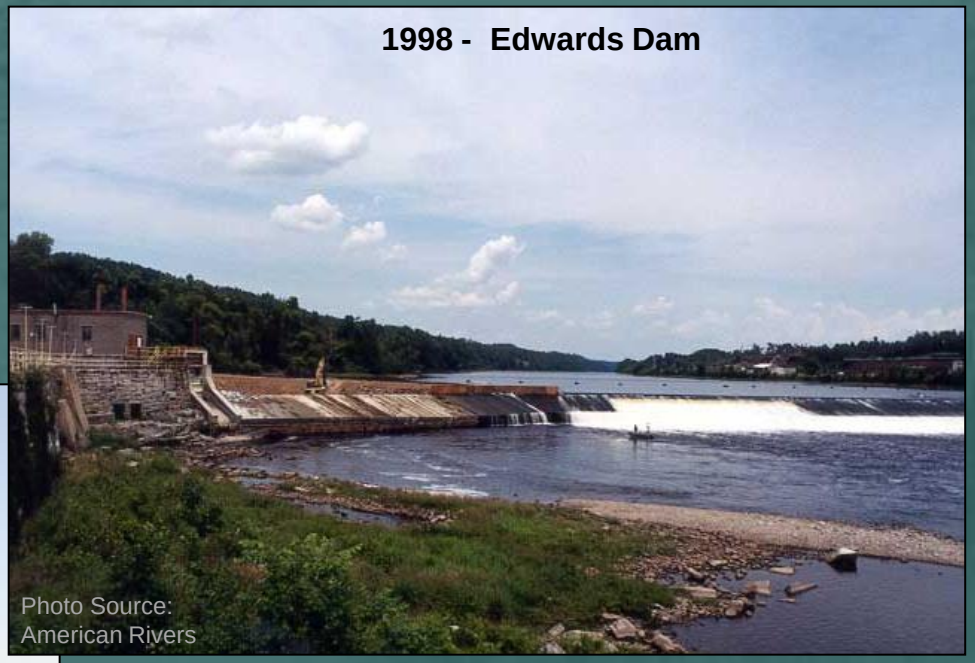


Photo Source:
American Rivers

Final Design: EPRO

1999 – Edwards Dam removed

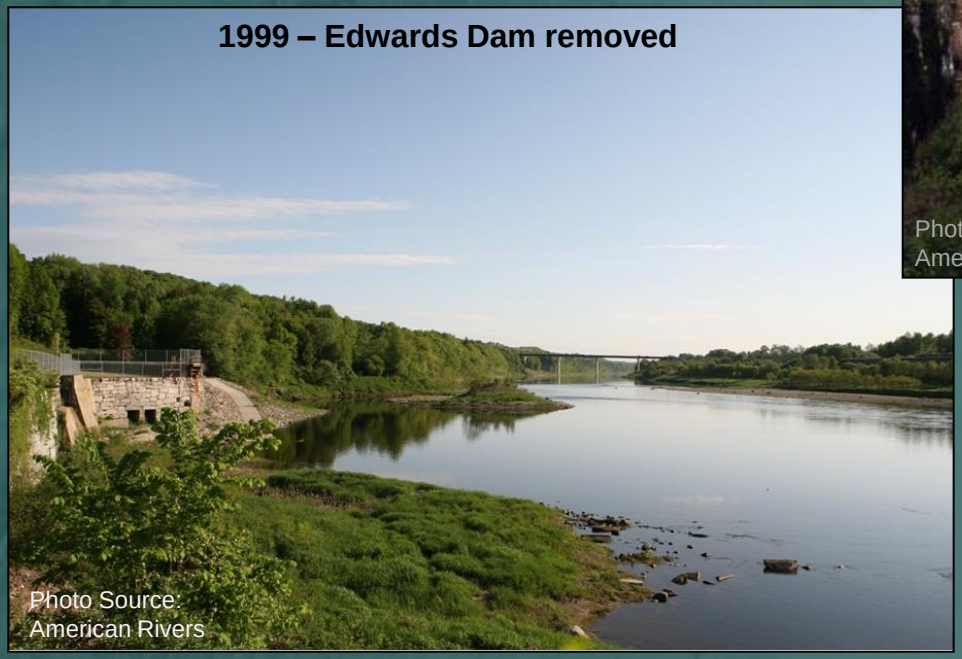
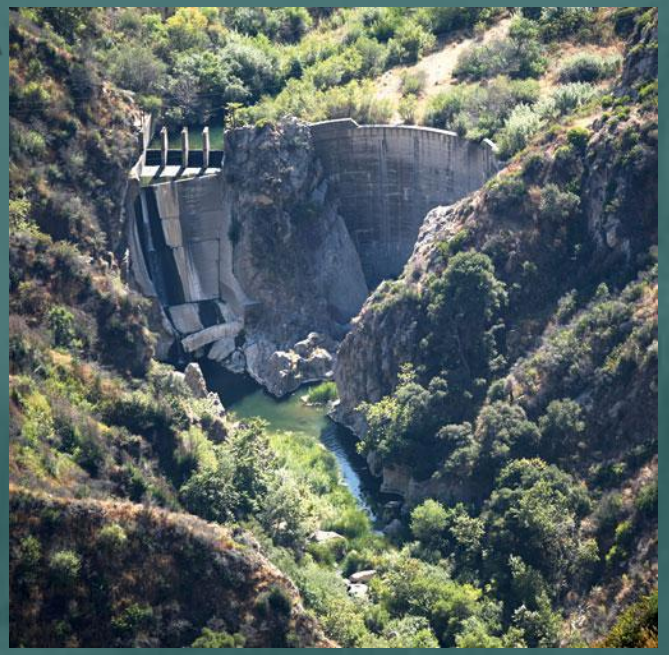


Photo Source:
American Rivers

QUANTITY OF SEDIMENT

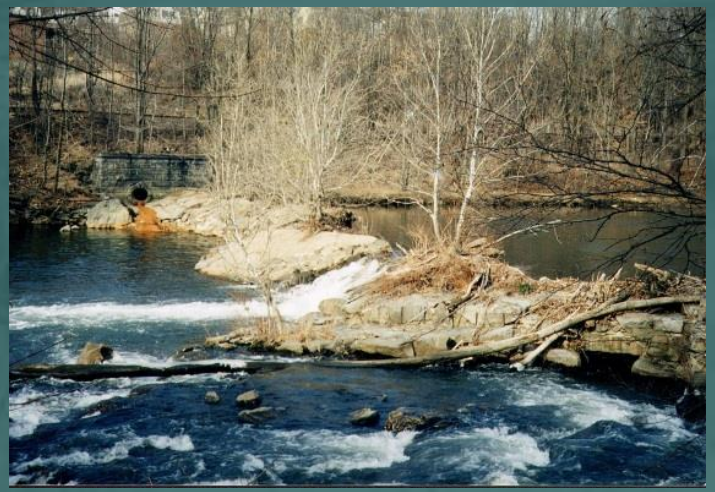
Dam Retained

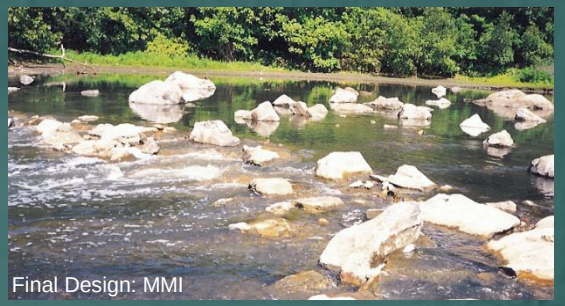
Matilija Dam, CA



Mad River Dam, CT (dam lowered)

Platts Mill Dam, CT
(partial width removal)





Final Design: MMI

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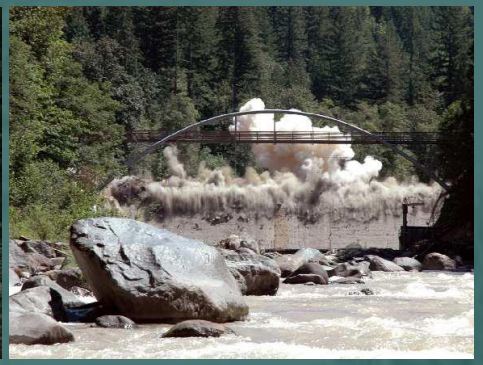
QUANTITY OF SEDIMENT

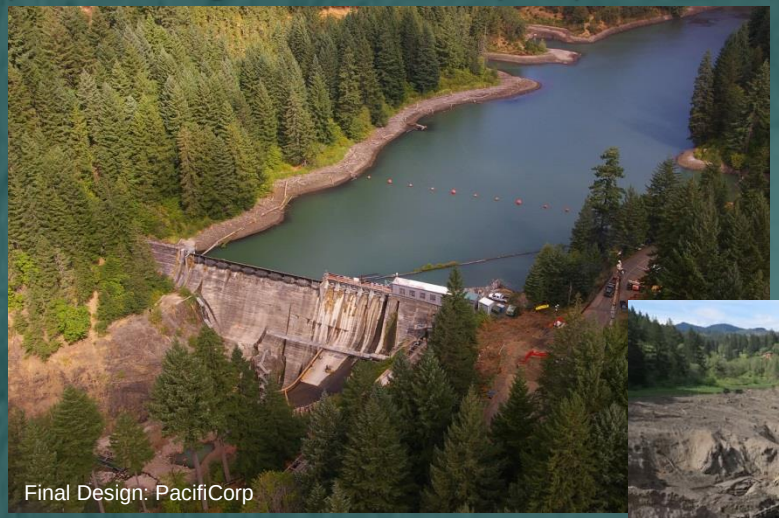
Dam Removed

Marmot Dam, OR
(allowed large short term impact)



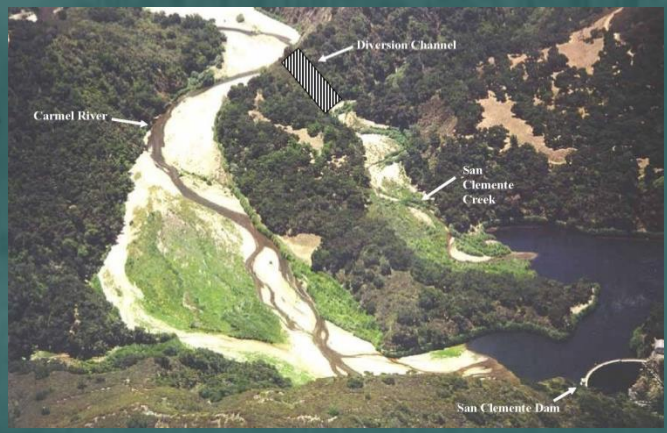
Final Design: PGE and Natt McDougall Co.

Condit Dam, OR
(allowed large short term impact)



Final Design: PacifiCorp

San Clemente Dam, CA
(bypass & remove dam)



Final Design: Tetra Tech

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QUALITY OF SEDIMENT

Dam Retained

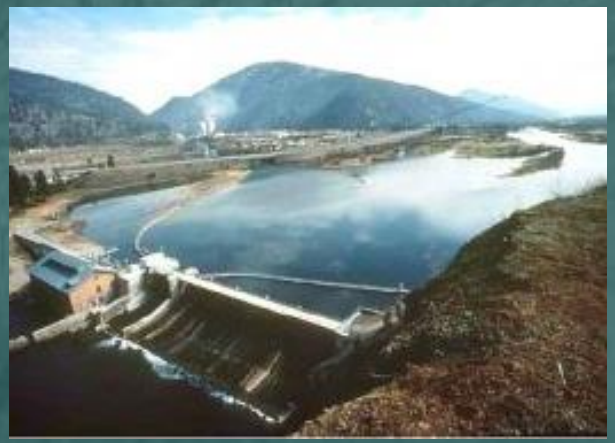
Cumberland Dam, MD

Lake Solitude Dam, NJ

QUALITY OF SEDIMENT

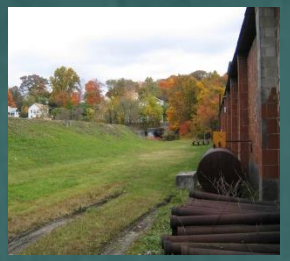
Dam Removed

Milltown Dam, MO (significant sediment removal and confinement)



Final Design: River Design Group and Envirocon

Heminway & Pinshop Dams, CT (relocated and stabilize sediment on-site)



Final Design: Princeton Hydro

Princeton Hydro

SCALE OF PROJECT

Dam Retained

Snake River Dams,
Pacific NW

Klamath
Dams, CA

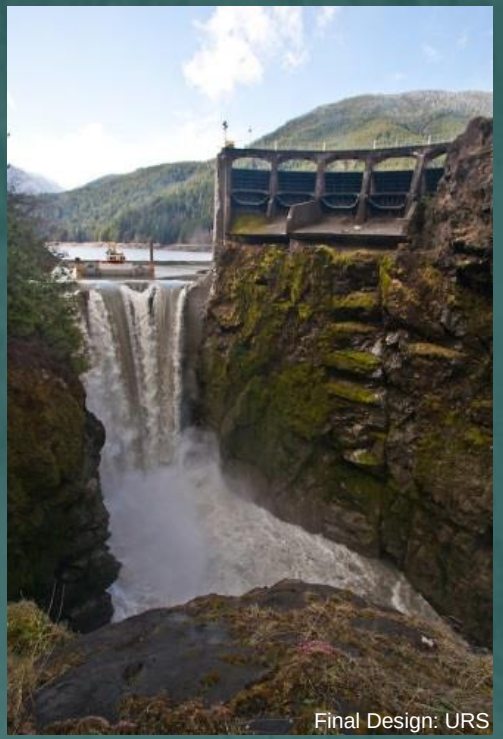
Princeton Hydro

SCALE OF PROJECT

Dam Removed

Elwha Dam, WA
(many years of planning and patience; took care of impacts 1st)

Glen Canyon Dam, WA
(many years of planning and patience; took care of impacts 1st)



Birch Run Dam, PA
(dewatered 1st)

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FUNDING OF PROJECT

Dam Retained

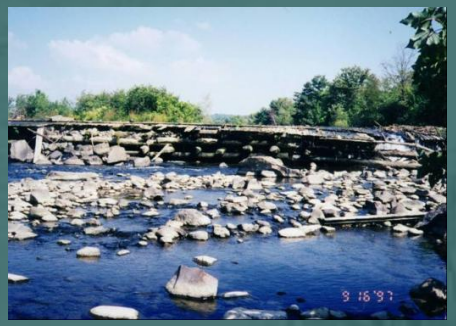
American Brass Co. Dam, CT

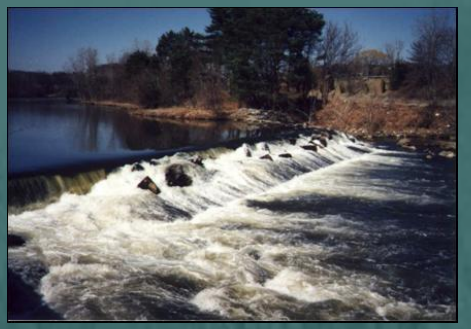
FUNDING OF PROJECT

Dam Removed

Naugatuck River Dams, CT

(Special Environmental Projects Funding; i.e. mitigation)





Final Design: MMI

Final Design: MMI

Middle Street Dam, CT

(Federal Highway Funding)

Final Design: Princeton Hydro

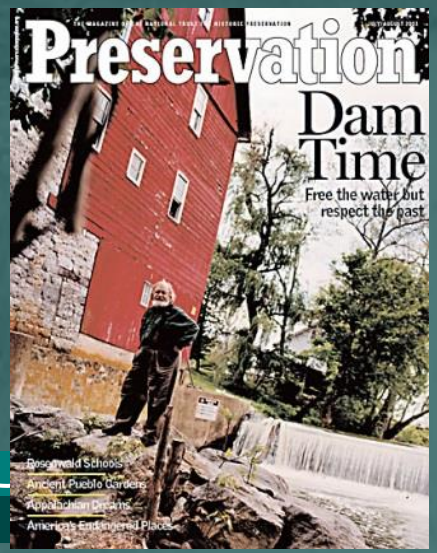
Princeton Hydro

HISTORIC ISSUES

Dam Retained

Wiley Russell Dam, MA

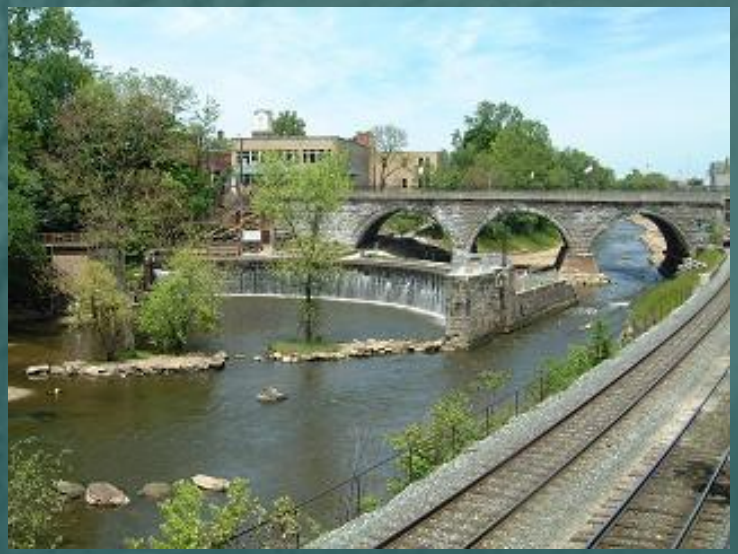
Heishman's Mill Dam, PA



HISTORIC ISSUES

Dam Removed

Kent Dam, OH
(kept portion of dam and created falling water aesthetic)



Final Design: CDM

Town Brook Dam, MA
(upfront study and documentation)

Final Design: MMI

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INFRASTRUCTURE ISSUES

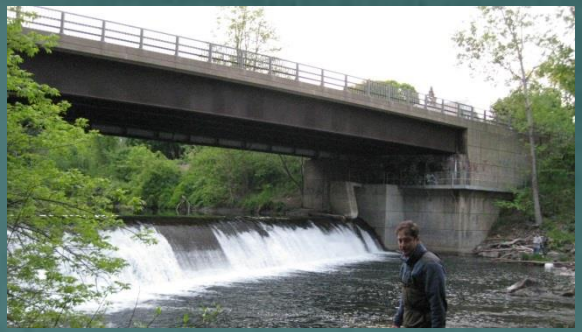
Dam Retained

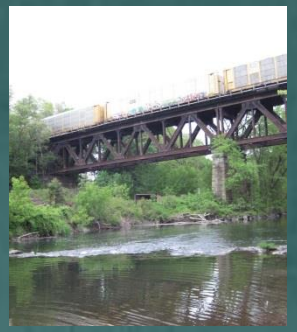
Tingue Dam, CT

Final Design: MMI

Brave Station Dam, PA

Mill Street Dam, MA





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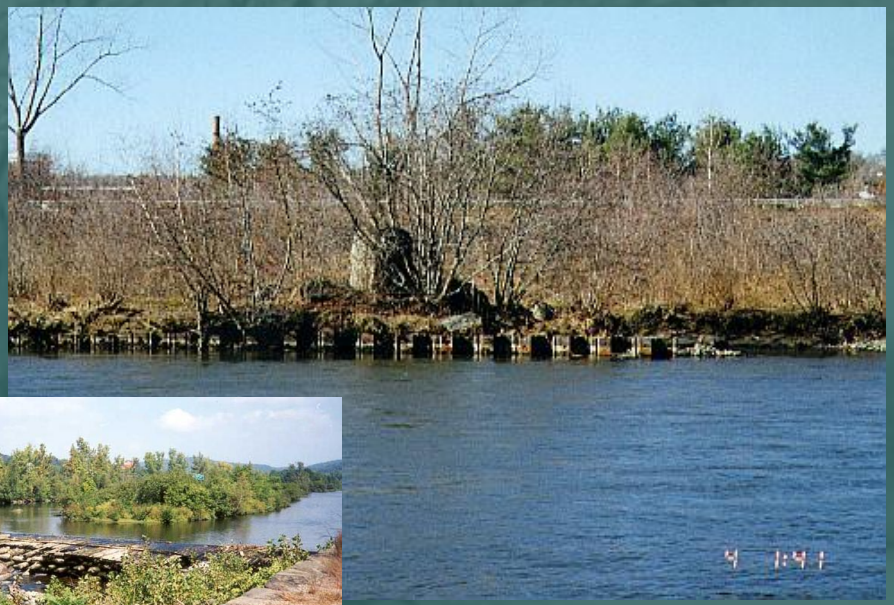
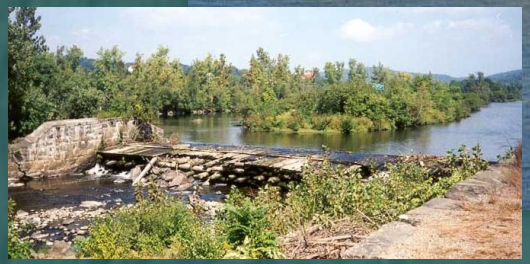
INFRASTRUCTURE ISSUES

Dam Removed

Anaconda & Union City Dams, CT (protected sewer line with sheet pile and concrete cap)





Final Design: MMI

Plymouth Crossing, PA
(small ramp/riffle at sewer crossing)

Final Design: Princeton Hydro

Princeton Hydro

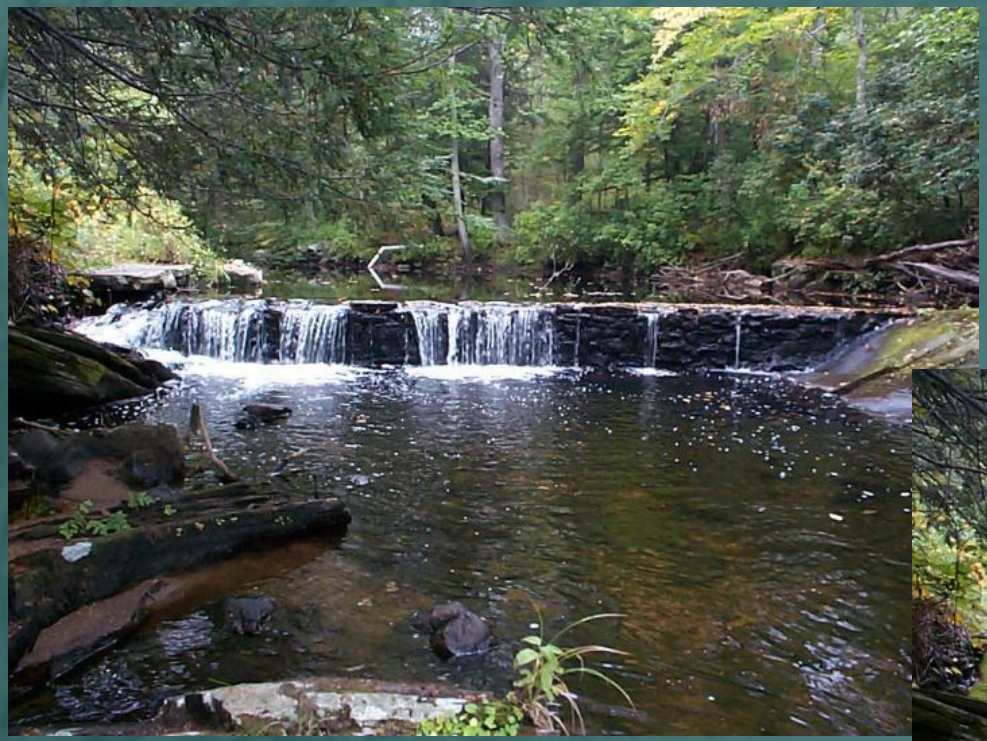
OWNER BUY-IN

Dam Retained

Plume & Atwood Dam, CT

OWNER BUY-IN

Dam Removed



Pizzini Dam, CT (photo renderings for absentee owner)

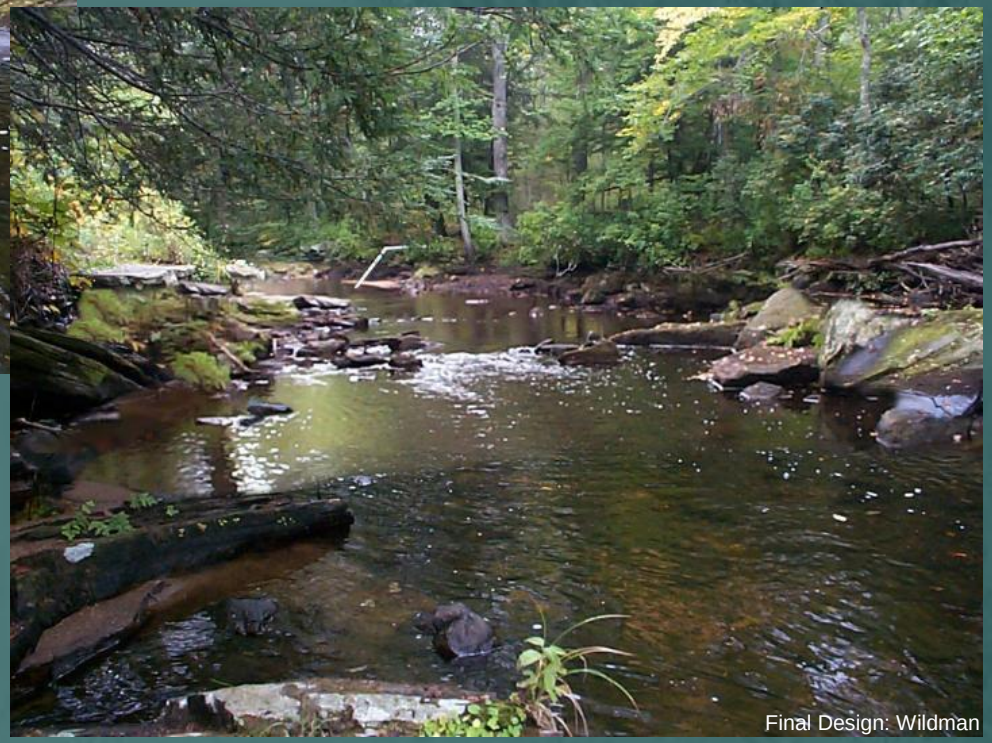


Photo-rendering

Princeton Hydro

COMMUNITY POLITICS

Dam Retained

Wiley Russell Dam, MA

Howland Dam, ME

COMMUNITY POLITICS

Dam Removed

Fort Halifax Dam, ME (economic justification)

Final Design: EPRO

West Winterport Dam, ME (extensive alternatives analysis, time & lawyers)

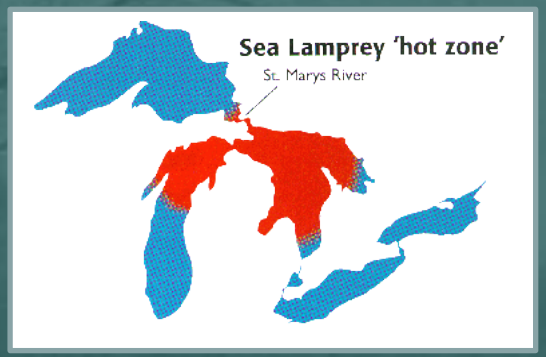
Final Design: Kleinschmidt

Princeton Hydro

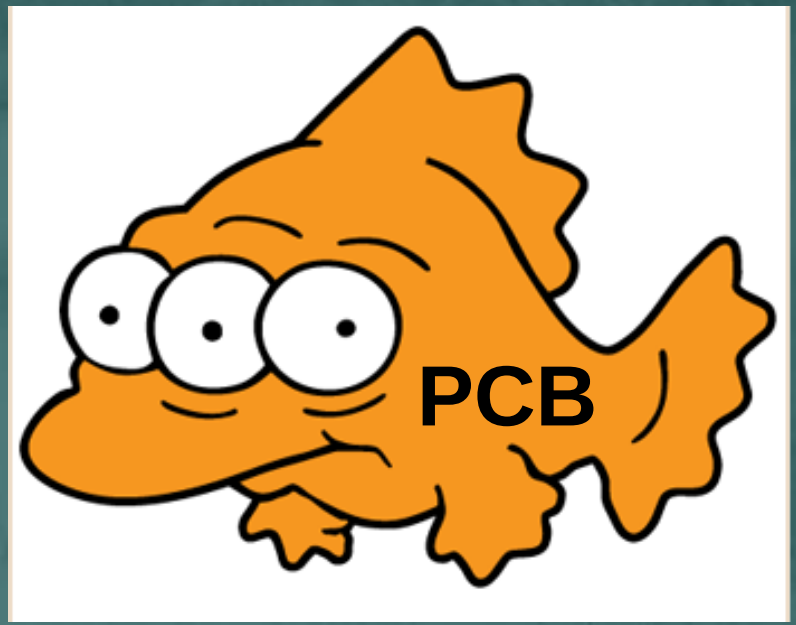
SENSITIVE OR INVASIVE SPECIES

Dam Retained

Many of 1st Barriers on the Great Lake Tributaries, Midwest



Government Mill Dam #6
E. Branch Housatonic River (lowest Crane Paper Dam)



SENSITIVE OR INVASIVE SPECIES

Dam Removed

Cuddebackville Dam, NY

(Dwarf Wedge Mussels – locate & relocate)

Gravesleigh Pond Dam, MA

(Wood Turtles – tag and track during construction)

Princeton Hydro

Thank You

"Identifying key barriers early on and understanding which of those barriers might have potential solutions versus remain an impediment, is critical to prioritizing limited ecological restoration resources"

Laura Wildman, PE
Ecological Restoration Engineer

Princeton Hydro

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Drawing by Steve Varner